

EXHIBIT 325



School of Public Health
Austin Regional Campus

February 1, 2022

Corrected Rule 26 Expert Report of Steven H. Kelder, PhD, MPH
Government Entity Bellwether Specific Report

IN RE: JUUL LABS, INC., MARKETING, SALES PRACTICES,
AND PRODUCTS LIABILITY LITIGATION

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA

Case No. 19-md-02913-WHO

In this report I have been given the following specific assignments from counsel:

Do you have an opinion, to a reasonable degree of professional and scientific certainty, as a behavioral epidemiologist with a specialty in behavioral health interventions and research methodology pertaining to child, adolescent, and young adult health, that a vaping epidemic exists among youth in the Bellwether sites?

Do you have an opinion, to a reasonable degree of professional and scientific certainty, as a behavioral epidemiologist with a specialty in behavioral health interventions and research methodology pertaining to child, adolescent, and young adult health, that there are generally accepted strategies and interventions related to tobacco and vaping prevention and cessation—including evidenced-based and evidence-informed strategies—that can be implemented in Bellwether sites to create a steep and sustained downward trajectory of the prevalence and harms associated with youth e-cigarette use, dependence, and addiction?

If so, what are the strategies and interventions that can, and should, be implemented in the Bellwether sites and over what period of time?

3. Summary of Opinions.

In response to the questions above, my opinions are set forth below. My opinions are based on my education, training, and 30 years of professional experience listed in my September 2021 Expert Report together with my review of the scientific evidence and materials listed in Appendices 6.1 and 6.2 in that report and Attachments 1 and 2 of this report. All my opinions are expressed to a reasonable degree of professional and scientific certainty and consensus, including as a behavioral epidemiologist with a specialty in behavioral health interventions and research methodology pertaining to child, adolescent, and young adult health.

Opinion 1: As described in my September 2021 Expert Report, there are generally accepted methods to understand and prioritize public health problems, and these include: (i) the identification of new and epidemic behavioral health problems; (ii) the conduct of surveillance studies to understand the antecedents and risk factors of the problem behavior and their relationship to acute and chronic disease; and (iii) consensus amongst scientific and health professional organizations on prevention and control initiatives.

Consistent with these methodologies, it is my professional and scientific opinion that e-cigarette use is an epidemic⁹ among youth in each of the Bellwether areas.

Opinion 2: As described in my September 2021 Expert Report, there are generally accepted behavioral intervention principles to design abatement strategies that will achieve their intended outcomes, and these include: (i) application of behavioral theory that is supported with scientific evidence; (ii) determinant studies (e.g., risk-factor identification) for youth experimentation, initiation, and continued use of tobacco and e-cigarettes that employ cross sectional, case control, and longitudinal study designs; (iii) program impact evaluation studies using randomized and quasi-experimental designs; and (iv) prevention best practices from practitioners, professional organizations, and implementation science.

Opinion 3: The strategies and interventions that should be implemented from a prevention perspective in each of the Bellwether sites to create a steep and sustained downward trajectory of the prevalence and harms associated with youth e-cigarette use, including dependence, and addiction should be consistent with CDC and WHO evidence-based strategies and are as follows:¹⁰

- (S1) Surveillance and evaluation;
- (S2) Community organization and information exchange;
- (S3) Counter-vaping mass media;
- (S4) Education and parent engagement;
- (S5) Youth anti-vaping policies; and
- (S6) Availability of cessation services.

⁹ The CDC defines epidemic as the occurrence of more cases of disease, injury or other health condition than expected in a given area or among a specific group of persons during a particular period. Usually, the cases are presumed to have a common cause or to be related to one another in some way. In behavioral epidemiology, epidemic refers to sudden rapid spread, growth, or development, such as an epidemic of sedentary behavior.

¹⁰ I understand that Dr. Jonathan Winickoff is also submitting expert reports in this matter in which he identifies strategies and interventions to address the youth vaping epidemic in the Bellwether areas. I understand that Dr. Winickoff focuses on strategies and interventions from the cessation perspective, whereas this report focuses on strategies and interventions from the prevention perspective. Both perspectives are needed to address the harms and impacts of the youth vaping epidemic and there will be some overlap between strategies and interventions relating to cessation and strategies and interventions relating to prevention.

V. E-Cigarette Abatement Duration

A long-term, continuous and dedicated financial and programmatic effort is needed to positively shift youth normative beliefs, outcome expectancies, intentions and ultimately prevent experimentation and continued use of e-cigarettes. Fortunately, there is a roadmap for prevention and cessation abatement stemming from the Tobacco Master Settlement Agreement (TMSA) and CDC, as described below.

In my September 2021 Expert Report I estimated that a minimum of 15 years of continuous and frequently updated programmatic effort will be necessary to reach an abatement target of five consecutive years of 4.5% or less high-school current e-cigarette use.¹⁷⁰ This estimation was based in part on 2020 NYTS data and projected reductions in e-cigarettes used once abatement programming commences, as well as historical trends in reducing youth tobacco use. In October 2021,¹⁷¹ the 2021 NYTS data was released indicating an overall reduction in high-school current e-cigarette use from 20% to 11.3%.¹⁷² Importantly, as the CDC acknowledged, the 2021 NYTS data was gathered using a new methodology, collecting data from students both at home *and* at school (in prior years, data was collected only from students while at school). Where students were surveyed made a difference, as the CDC reported the current e-cigarette high-school rate was 15% for students surveyed at school, which is higher than those who completed the survey at home.¹⁷³ This change in methodology calls into question any comparisons between the NYTS 2021 data and the data from previous years and the CDC itself says that "the 2021 NYTS estimates should not be compared with previous NYTS survey waves that were primarily conducted on school campuses."¹⁷⁴ When reporting the results

¹⁷⁰ This is a conservative goal, given the fact that a JLI consultant on youth prevention set a goal to bring the youth vaping rate down to 2%, or "98% vaping free." Harter Dep. Ex. 355 at 3.

¹⁷¹ I gave a deposition with respect to my September report on October 29, 2021.

¹⁷² To account for the 2021 NYTS data, I updated the tables and appended the report at the time of the deposition.

¹⁷³ Park-Lee, E. et al. *Notes from the Field: E-cigarette Use Among Middle and High School Students—United States, 2021*. CDC vol. 70,39 (2021): 1387, 1387-1389.

<https://www.cdc.gov/mmwr/volumes/70/wr/mm7039a4.htm> ("Youths who reported participating in the 2021 NYTS in a school building or classroom reported a higher prevalence of e-cigarette use compared with youths participating at home or at some other place; 15.0% of high school students who took the survey in a school building or classroom reported currently using e-cigarettes").

¹⁷⁴ *Id.*

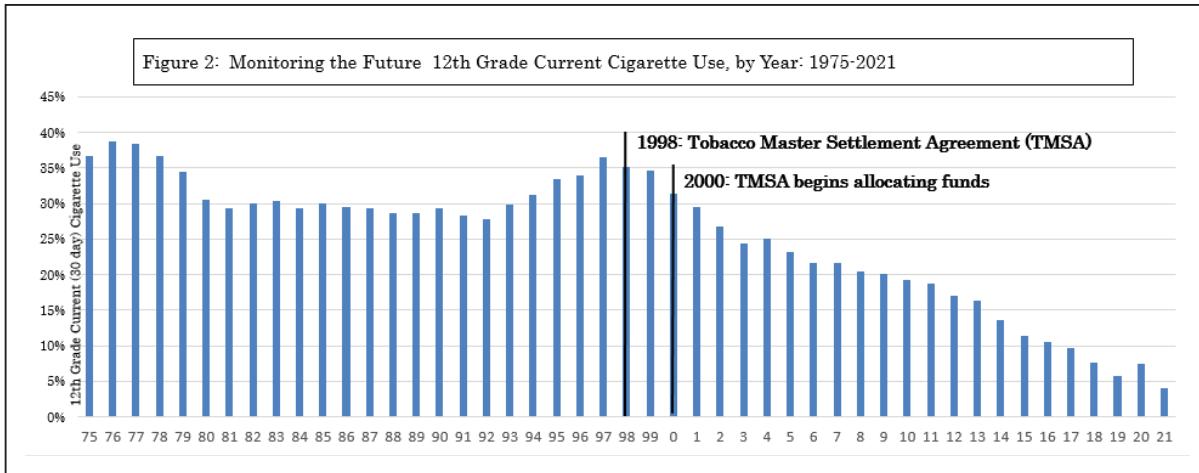
of the 2021 NYTS, the FDA also indicated that use of e-cigarettes "remains a serious public health concern" and "disturbingly high rates of frequent and daily e-cig[arette] use suggest many teens have a strong dependence on nicotine."¹⁷⁵

I have refined my analysis of the time it will take to abate the e-cigarette epidemic among youth to account for the limitations of 2021 NYTS data, the recently released 2021 data from the Monitoring the Future (MTF) study, and to allow for periodic increases in youth e-cigarette use. Table 4 illustrates my conclusion that abating the epidemic will likely take between 13 and 17 years. Based on that estimate, in my opinion it is reasonable to anticipate and plan for the Bellwethers to implement the abatement strategies for 15 years. The new data confirms the earlier estimate for the reasons explained below.

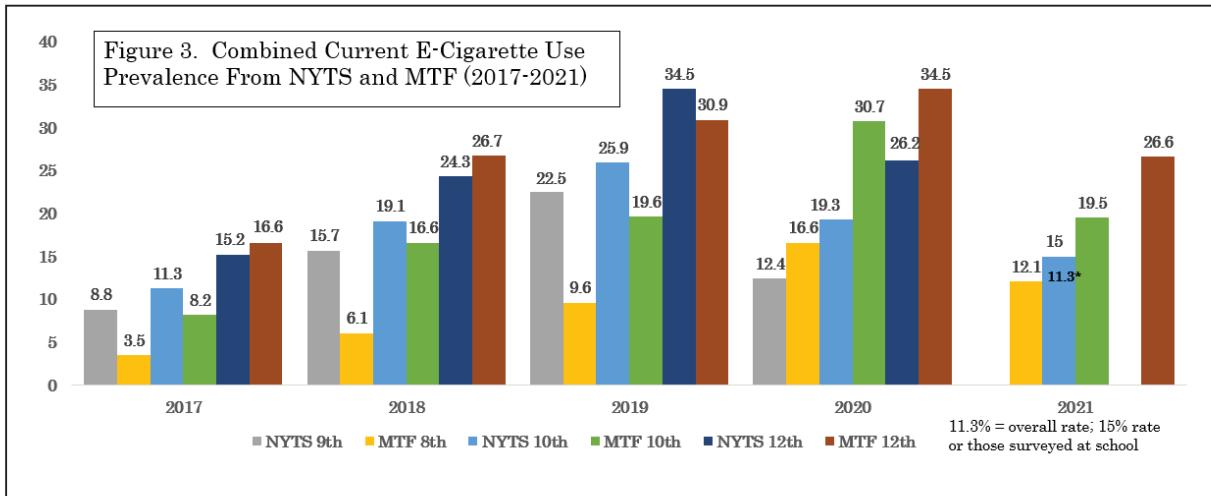
The full set of 12th grade MTF data are presented in Figure 2 depicting 12th grade current cigarette use, with a line drawn in 1998 and 2000, the year of the Tobacco Master Settlement Agreement (TMSA) was enacted and funding was released to states. The figure illustrates fluctuations in prevalence, yet a pronounced and sustained long-term decrease in tobacco use following the initiation of TMSA state funding. A 5.7% year-over-year overall long and continuous downward trajectory can be observed. Over a ten-year cumulative period from 1998-2008, current cigarette use among youth was cut by 41%; from 2008 to 2017, by 52%; from 2018 -2021 another 57% decline.

Youth E-cigarette Use Remains Serious Public Health Concern Amid COVID-19 Pandemic, U.S. Food & Drug Admin. (Sept. 30, 2021), <https://www.fda.gov/news-events/press-announcements/youth-e-cigarette-use-remains-serious-public-health-concern-amid-covid-19-pandemic>; *Results from the Annual National Youth Tobacco Survey*, U.S. Food & Drug Admin. (Jan. 10, 2022), <https://www.fda.gov/tobacco-products/youth-and-tobacco/results-annual-national-youth-tobacco-survey>.

Figure 2 offers important lessons to understand how to achieve similar results with e-cigarette use. The cumulative application of the six abatement strategies over time for teen cigarette use depicted in Figure 1 resulted in a steep and sustained downward trajectory of the cigarette prevalence that was sustained over 23 years (1998-2021) from 34.6 to 4.1%.



As a relatively new product, e-cigarettes have a 10-year history in the United States and as of this report writing, are not sold as an FDA approved cessation or harm reduction product. Figure 3 illustrates the natural variation (increase and decreases) of youth e-cigarette use and shows an overall pattern of early experimentation, rapid increase, followed by two years of prevalence stability or reduction. Interestingly, the peak in 12th grade current e-cigarette consumption in 2019 was 34.52%, very close to the 1998 current combustible cigarette rate of 35.10%.



Taken together the 2021 NYTS data and recent data released from the MTF shown in Figure 3 and the abatement simulation presented in Table 4, indicate the duration of abatement program implementation is recommended at 13-17 years, with 15% selected as the most appropriate base rate in Year 0 of the abatement plan.

Abatement duration selection was based on results from the simulation in Table 4 and on the following assumptions: (1) the abatement goal is to achieve a 5-year sustained current e-cigarette use prevalence at 4.5% (the 2013 NYTS high school current e-cigarette use rate) from a baseline rate of 15% (the 2021 at-school NYTS high school current e-cigarette rate, which is most similar to similar NYTS measurements); (2) to approximate the fluctuations in current e-cigarette use the annual year-over-year e-cigarette rate change ranges from +5.0% to -35%; and (3) the abatement interventions range from 1 to 24 years. Further considerations that support the assumptions used in Table 4 are presented below in Table 5.

The orange shaded cells illustrate a 5-year sustained current e-cigarette rate abatement at 4.5% or below could be achieved within 10 to 21 years, depending on the assumptions used. An e-cigarette abatement period of 10 to 21 years is parallel to the 21-year time for the high-school combustible cigarette rate to decline from 34.5 to 5.4%. An examination of the table reveals that a 10-year abatement framework was calculated under the most extreme sustained base rate (30% year over year reduction) and is an outlier. The next abatement sustained success level is 13 years, followed by 17 years.

Table 4. Annual Year-Over-Year Percent Change in 30-day Current E-Cigarette Use: Percent 30-Day Current Use.

Δ	Base Rate	Yr 1	Yr 2	Δ	Yr 3	Yr 4	Δ	Yr 5	Yr 6	Δ	Yr 7	Yr 8	Δ	Yr 9	Yr 10	Δ	Yr 11	Yr 12	Δ	Yr 13	Yr 14	Δ	Yr 15
-11%	15%	13.4%	11.9%	5.0%	12.5%	13.1%	-11%	11.7%	10.4%	4.0%	10.8%	11.2%	-11.0%	10.0%	8.9%	3.0%	9.2%	9.4%	-11%	8.4%	7.5%	2.0%	7.6%
-12%	15%	13.2%	11.6%	5.0%	12.2%	12.8%	-12%	11.3%	9.9%	4.0%	10.3%	10.7%	-12.0%	9.4%	8.3%	3.0%	8.6%	8.8%	-12%	7.8%	6.8%	2.0%	7.0%
-13%	15%	13.1%	11.4%	5.0%	11.9%	12.5%	-13%	10.9%	9.5%	4.0%	9.9%	10.2%	-13.0%	8.9%	7.8%	3.0%	8.0%	8.2%	-13%	7.2%	6.2%	2.0%	6.4%
-14%	15%	12.9%	11.1%	5.0%	11.6%	12.2%	-14%	10.5%	9.0%	4.0%	9.4%	9.8%	-14.0%	8.4%	7.2%	3.0%	7.5%	7.7%	-14%	6.6%	5.7%	2.0%	5.8%
-15%	15%	12.8%	10.8%	5.0%	11.4%	11.9%	-16%	10.0%	8.4%	4.0%	8.8%	9.1%	-16.0%	7.7%	6.4%	3.0%	6.6%	6.8%	-16%	5.7%	4.8%	2.0%	4.9%
-16%	15%	12.6%	10.6%	5.0%	11.1%	11.7%	-17%	9.7%	8.0%	4.0%	8.4%	8.7%	-17.0%	7.2%	6.0%	3.0%	6.2%	6.4%	-17%	5.3%	4.4%	2.0%	4.5%
-17%	15%	12.5%	10.3%	5.0%	10.9%	11.4%	-18%	9.3%	7.7%	4.0%	8.0%	8.3%	-18.0%	6.8%	5.6%	3.0%	5.7%	5.9%	-18%	4.8%	4.0%	2.0%	4.1%
-18%	15%	12.3%	10.1%	5.0%	10.6%	11.1%	-19%	9.0%	7.3%	4.0%	7.6%	7.9%	-19.0%	6.4%	5.2%	3.0%	5.3%	5.5%	-19%	4.4%	3.6%	2.0%	3.7%
-19%	15%	12.2%	9.8%	5.0%	10.3%	10.9%	-20%	8.7%	6.9%	4.0%	7.2%	7.5%	-20.0%	6.0%	4.8%	3.0%	5.0%	5.1%	-20%	4.1%	3.3%	2.0%	3.3%
-20%	15%	12.0%	9.6%	5.0%	10.1%	10.6%	-21%	8.4%	6.6%	4.0%	6.9%	7.1%	-21.0%	5.6%	4.5%	3.0%	4.6%	4.7%	-21%	3.7%	3.0%	2.0%	3.0%
-21%	15%	11.9%	9.4%	5.0%	9.8%	10.3%	-22%	8.1%	6.3%	4.0%	6.5%	6.8%	-22.0%	5.3%	4.1%	3.0%	4.3%	4.4%	-22%	3.4%	2.7%	2.0%	2.7%
-22%	15%	11.7%	9.1%	5.0%	9.6%	10.1%	-23%	7.7%	6.0%	4.0%	6.2%	6.5%	-23.0%	5.0%	3.8%	3.0%	3.9%	4.1%	-23%	3.1%	2.4%	2.0%	2.5%
-23%	15%	11.6%	8.9%	5.0%	9.3%	9.8%	-24%	7.5%	5.7%	4.0%	5.9%	6.1%	-24.0%	4.7%	3.5%	3.0%	3.6%	3.8%	-24%	2.9%	2.2%	2.0%	2.2%
-24%	15%	11.4%	8.7%	5.0%	9.1%	9.6%	-25%	7.2%	5.4%	4.0%	5.6%	5.8%	-25.0%	4.4%	3.3%	3.0%	3.4%	3.5%	-25%	2.6%	2.0%	2.0%	2.0%
-25%	15%	11.3%	8.4%	5.0%	8.9%	9.3%	-26%	6.9%	5.1%	4.0%	5.3%	5.5%	-26.0%	4.1%	3.0%	3.0%	3.1%	3.2%	-26%	2.4%	1.8%	2.0%	1.8%
-26%	15%	11.1%	8.2%	5.0%	8.6%	9.1%	-27%	6.6%	4.8%	4.0%	5.0%	5.2%	-27.0%	3.8%	2.8%	3.0%	2.9%	3.0%	-27%	2.2%	1.6%	2.0%	1.6%
-27%	15%	11.0%	8.0%	5.0%	8.4%	8.8%	-28%	6.3%	4.6%	4.0%	4.8%	4.9%	-28.0%	3.6%	2.6%	3.0%	2.6%	2.7%	-28%	2.0%	1.4%	2.0%	1.4%
-28%	15%	10.8%	7.8%	5.0%	8.2%	8.6%	-29%	6.1%	4.3%	4.0%	4.5%	4.7%	-29.0%	3.3%	2.4%	3.0%	2.4%	2.5%	-29%	1.8%	1.3%	2.0%	1.3%
-29%	15%	10.7%	7.6%	5.0%	7.9%	8.3%	-29%	5.9%	4.2%	4.0%	4.4%	4.5%	-29.0%	3.2%	2.3%	3.0%	2.4%	2.4%	-29%	1.7%	1.2%	2.0%	1.2%
-30%	15%	10.5%	7.4%	5.0%	7.7%	8.1%	-30%	5.7%	4.0%	4.0%	4.1%	4.3%	-30.0%	3.0%	2.1%	3.0%	2.2%	2.2%	-30%	1.6%	1.1%	2.0%	1.1%

Δ	Base Rate	Δ	Yr 16	Δ	Yr 17	Yr 18	Δ	Yr 19	Yr 20	Δ	Yr 21	Yr 22
-11%	15%	2.0%	7.8%	-11%	6.9%	6.2%	1%	6.2%	6.3%	-11%	5.6%	5.0%
-12%	15%	2.0%	7.1%	-12%	6.2%	5.5%	1%	5.6%	5.6%	-12%	4.9%	4.3%
-13%	15%	2.0%	6.5%	-13%	5.6%	4.9%	1%	5.0%	5.0%	-13%	4.4%	3.8%
-14%	15%	2.0%	5.9%	-14%	5.1%	4.4%	1%	4.4%	4.5%	-14%	3.8%	3.3%
-15%	15%	2.0%	5.0%	-16%	4.2%	3.5%	1%	3.6%	3.6%	-16%	3.0%	2.5%
-16%	15%	2.0%	4.6%	-17%	3.8%	3.1%	1%	3.2%	3.2%	-17%	2.7%	2.2%
-17%	15%	2.0%	4.1%	-18%	3.4%	2.8%	1%	2.8%	2.8%	-18%	2.3%	1.9%
-18%	15%	2.0%	3.7%	-19%	3.0%	2.5%	1%	2.5%	2.5%	-19%	2.0%	1.6%
-19%	15%	2.0%	3.4%	-20%	2.7%	2.2%	1%	2.2%	2.2%	-20%	1.8%	1.4%
-20%	15%	2.0%	3.1%	-21%	2.4%	1.9%	1%	1.9%	2.0%	-21%	1.5%	1.2%
-21%	15%	2.0%	2.8%	-22%	2.2%	1.7%	1%	1.7%	1.7%	-22%	1.3%	1.0%
-22%	15%	2.0%	2.5%	-23%	1.9%	1.5%	1%	1.5%	1.5%	-23%	1.2%	0.9%
-23%	15%	2.0%	2.3%	-24%	1.7%	1.3%	1%	1.3%	1.3%	-24%	1.0%	0.8%
-24%	15%	2.0%	2.0%	-25%	1.5%	1.1%	1%	1.2%	1.2%	-25%	0.9%	0.7%
-25%	15%	2.0%	1.8%	-26%	1.3%	1.0%	1%	1.0%	1.0%	-26%	0.8%	0.6%
-26%	15%	2.0%	1.6%	-27%	1.2%	0.9%	1%	0.9%	0.9%	-27%	0.6%	0.5%
-27%	15%	2.0%	1.5%	-28%	1.1%	0.8%	1%	0.8%	0.8%	-28%	0.6%	0.4%
-28%	15%	2.0%	1.3%	-29%	0.9%	0.7%	1%	0.7%	0.7%	-29%	0.5%	0.3%
-29%	15%	2.0%	1.3%	-29%	0.9%	0.6%	1%	0.6%	0.7%	-29%	0.5%	0.3%
-30%	15%	2.0%	1.1%	-30%	0.8%	0.6%	1%	0.6%	0.6%	-30%	0.4%	0.3%

The Blue column indicates a range of annual increase or decrease in the prevalence of current high school e-cigarette use.
The Green column is the base rate used to calculate subsequent increase of decrees in current e-cigarette use.
Orange colored cells indicates a 5 year sustained current e-cigarette rate below 4.5%.
Following historical trends, in Years 7, 11, 15, and 19 the e-cigarette rate increases by 1% to 5%.
Following historical trends, in Years 9, 13, 17, and 21 the e-cigarette rate decreased by a range from 11%-30%.

Table 5 Support and Considerations for Assumptions in Table 4

1. CDC cautions against interpreting NYTS data collected in 2020 and 2021 because of the impact of COVID-19 and changes in survey methodology. In both years, data collection was incomplete resulting in fewer youth surveys and less confidence in the estimated parameters. In addition, in 2021 the NYTS e-cigarette current smoking rate was nearly 50% less at-home vs in-school data collection (8.1 vs. 15%). In previous years, data were collected only at-school, thus 15% is the recommended base 0 point. The location of survey administration was not reported in 2020.
2. Some have questioned if the current e-cigarette rate during the 'COVID-19' era is an accurate representation of the youth population prevalence.¹⁷⁶ The 2020 Monitoring the Future data indicated a one-year increase in current e-cigarette use rate of +6%; a 12th grade increase of +10%; a 10th grade decrease of -1.5%; and 8th grade increase of +9.3%. In 2020 MTF data was collected in school, none at home. In 2021, MTF data were collected at-school or at home, although differences in e-cigarette prevalence by survey methodology were reported as non-significant (prevalence parameters were not presented).
3. E-cigarette rates are estimated to hold steady or decline in 2022 given the COVID-19 Omicron variant produces a higher infectivity rate than Delta, with renewed social distancing, school closings, and incomplete data collection (as seen in NYTS and MTF 2020 and 2021).
4. From 2011 – 2021, the average NYTS per year change in e-cigarette rate was +28.6%;
 $2012 - 21 = +20.7\%$; $2013 - 21 = +17\%$; $2014 - 21 = +.035\%$; $2015 - 21 = +.042\%$;
 $2016 - 21 = +.081\%$; $2017 - 21 = +.094\%$; $2018 - 21 = -.14\%$; $2019 - 21 = -.36\%$;
 $2020 - 21 = -.42\%$.
5. The MTF and NYTS 2020 data illustrates the volatility created by the COVID pandemic that required differing measurement techniques and truncated sampling frames. Overall, in 2019-2020 the high-school MTF current e-cigarette rate change was +6% and 12th grade change was +10%. The NYTS change from 2019-2020 overall was -28.7 and 12th grade change was -31.5%.
6. MTF 2021 data collection was 75% of the sample size of a typical year's data collection, but the results were gathered from a broad geographic and representative sample, so the data were statistically weighted to provide national numbers. All participating students took the survey via a web-based survey – either on tablets or on a computer – with 40% of respondents taking the survey in-person in school, and 60% taking the survey from home while they underwent virtual schooling.

¹⁷⁶ Kreslake, J.M. et al. *E-Cigarette Use Among Youths and Young Adults During the COVID-19 Pandemic: United States, 2020* (2021) Am. J. of Pub. Health, vol.111,6, 1132-1140
<https://ajph.aphapublications.org/doi/10.2105/AJPH.2021.306210>.

7. Because CDC issued a warning for interpreting 2020 and 2021 e-cigarette data, and MTF reporting an overall increase between 2020 and 2021, the rate of change in current e-cigarette use have been selected to illustrate a range of possible scenarios, from +5% to -30%.
8. Presented in Table 1, a base rate of 15% was chosen as the most appropriate estimate because the NYTS current e-cigarette prevalence for at school data collection in 2021 was 15%.
9. The 2013 national youth tobacco survey current e-cigarette rate was 4.5%, and this was selected as the abatement target rate. It was selected because it precedes JUUL's full entry into the marketplace, and is the last year when cigarettes were the most used nicotine product. Youth e-cigarettes became more popular among youth than combustible cigarettes in 2014.

Bellwether Recommendation 2. Contract with health research organization for surveillance and evaluation activities for three populations of interest: a) K-12 students and young adults; b) Parents; and c) Industry tobacco activities (such as RTI, Westat, Pacifica, Rand).

Suggested Activities: As children age, their cognitive capacities mature. Because of this, surveillance activities need to be tailored for developmental appropriateness to the age of the participating individual. Most of the abatement Bellwethers rely on federally funded surveillance systems such as the National Youth Tobacco Survey, Youth Risk Factor Surveillance System, and/or Monitoring the Future sites. Unfortunately, these tobacco and e-cigarette surveillance systems are problematic for e-cigarette abatement purposes because: (1) while representative at the federal and state levels, they are not specific to the local level and are not collected frequently enough for tactical decisions; (2) they do not include critical information from parents about e-cigarette understanding and awareness; (3) home e-cigarette policies regarding underage e-cigarette use, such as prohibiting youth from using e-cigarettes and disciplining them if they do; and (4) do not include information needed to counter e-cigarette industry actions.

In addition to student and parent information, the Bellwethers need tactical information on the e-cigarette industry's activities on the internet and through public relations, advertising, and advocacy/lobbying. These data are instrumental to inform decision making by stakeholders, schools, parents, chambers of commerce, and licensing authorities.

Recommendations for Abatement Strategy 1 (S1): E-cigarette Surveillance, Evaluation & Industry Activities. See Table 6 for an overview of (S1) activities and Table 7 for specific surveillance planning activities by age band. This strategy closely aligns with the surveillance and evaluation the CDC recommends among its Best Practices for Comprehensive Tobacco Control Programs.¹⁷⁷ Counties, cities, and schools have the ability but not the capacity to engage in surveillance activities. Because of this, the

¹⁷⁷ *Best Practices for Comprehensive Tobacco Control Programs*, CDC (2014), https://www.cdc.gov/tobacco/stateandcommunity/best_practices/pdfs/2014/comprehensive.pdf.

abatement plan calls for contracting with an outside health research organization to conduct twice per year (bi-annual) population representative quantitative and qualitative assessments from and K-12 students, 19–25-year-olds, and parents to provide local stakeholders the information they need to make precise abatement decisions. The health research organization will provide detailed quarterly reports on youth and parent e-cigarette and all tobacco use. It is important to understand total tobacco consumption because many students are dual users, that is, once dependent on e-cigarettes they start to use other forms of tobacco. The plan also calls for contracting with an eligible market research organization (e.g., AC Nielson) to provide quarterly reports on e-cigarette industry sales and promotional activities.

Table 6. Abatement Strategy 1. E-cigarette Surveillance, Evaluation & Industry Activities

Bellwether Recommendations	Timeframe	Consultants or Organizations	Abatement & Plaintiff Staff
Contract with health research organization for: 1) Student, 2) Parent and 3) Industry tobacco surveillance (such as RTI, Westat, Pacifica, Rand).	1) Conduct a semiannual population representative <u>quantitative</u> surveillance study of youth and parent e-cigarette behaviors and risk factors: a) 5th gr; b) 6-8th gr; c) 10th gr; d) 12th gr; e) 19-25 year olds. 2) Conduct a semi-annual <u>qualitative</u> study of parent study regarding e-cigarette parenting styles, and student perceptions of e-cigarettes from: a) 5th gr; b) 6-8th gr; c) 10th gr; d) 12th gr.; e) 19-25 year olds.	1) Health research organization <u>quantitative</u> research and evaluation; 2) Health research organization <u>qualitative</u> research and evaluation.	Abatement Staff Needed: Project Director Assistant Project Director Intervention Parent Education Epidemiologist Data Manager Info Tech
Contract with AC Neilson for market research to monitor industry activities by internet, public relations, advertising, advocacy/lobbying of e-cigarettes.	Conduct a quarterly industry, retail, and marketing data collection	<u>AC Neilson</u> (or other similar service)	Plaintiff Staff: Health education, administrative and tobacco control staff
Resources Needed	Annual Expected Expenditures	Expected Outcomes	
Contract budget with external health research organization and percent effort for internal personnel.	For external health research organization quantitative research at approximately 13% of non surveillance and non infrastructure project costs (see individual bellwether budget).	Detailed quarterly analyses, interpretation and reporting of time trends of youth: 1) E-cigarette use and quitting behaviors, 2) Risk factors, 3) Social determinants, attitudes.	
Contract budget with AC Neilson external organization and percent effort for internal personnel.	For external health research organization qualitative research	Detailed quarterly analyses, interpretation and reporting of: 1) parent e-cigarette and combustible use tobacco behaviors and attitudes; and 2) home implementation of youth e-cigarette prevention activities.	
	For AC Neilson: \$150,000 per year and percent effort for personnel.	Detailed quarterly analyses, interpretation and reporting of e-cigarette industry activities.	

Table 7. Surveillance/Evaluation of E-cigarette Knowledge and Behaviors by Age Bands.

Age band	Surveillance Goals	Surveillance Strategy
Ages 2-8 (Pre-K-2 grade)	<ul style="list-style-type: none"> • Measurement anti-vaping knowledge, beliefs, attitudes, norms, and behaviors • Measurement of social determinants of health with consideration for this age group 	<ul style="list-style-type: none"> • Annual random sample of parents of 2-8-year children for qualitative assessment; children typically cannot read at this age • Annual parent, educational, faith based, healthcare/public health & business stakeholder qualitative discussions for this age band • Circulation of quarterly report
Ages 8-11 (3-5 grade)	<ul style="list-style-type: none"> • Measurement of vaping and other tobacco behaviors and risk factors • Measurement of county, community, and school anti-vaping instruction and policy activities for this age band 	<ul style="list-style-type: none"> • Annual random sample of 5th grade students, as they are able to answer NYTS and MTF survey questionnaires. • Annual parent, educational, faith based, healthcare/public health and business stakeholder discussion for this age band • Circulation of quarterly report
Ages 11-14 (6-8 grade)	<ul style="list-style-type: none"> • Measurement of vaping and other tobacco behaviors and risk factors • Measurement of county, community, school vaping instruction & policy activities for this age band 	<ul style="list-style-type: none"> • Annual random sample of 6-8th grade students for NYTS and MTF questionnaires. • Annual parent, educational, faith based, healthcare/public health and business stakeholder discussion for this age band • Circulation of quarterly report
Ages 14-18 (9-12 grade)	<ul style="list-style-type: none"> • Measurement of vaping behaviors and risk factors • Measurement of county, community, and school vaping education, cessation services and policy activities for this age band 	<ul style="list-style-type: none"> • Annual random sample of 10th and 12th grade students for NYTS and MTF questionnaires • Annual parent, educational, faith based, healthcare/public health and business stakeholder discussion for this age band • Circulation of quarterly report
Ages 19-25 (work/college)	<ul style="list-style-type: none"> • Measurement of vaping and other tobacco behaviors and risk factors • Measurement of county, community, and school vaping education, cessation services and policy activities for this age band 	<ul style="list-style-type: none"> • Annual random sample of 19-25-year-old young adults with questions from ATS and NHIS • Annual parent, educational, faith based, healthcare/public health and business stakeholder discussion for this age band • Circulation of quarterly report

Bellwether Recommendation 3 (1) Assign or hire personnel to serve as the program management arm of abatement program planning and implementation; and (2) Contract with a community organization expert to develop a blueprint of a community-based participatory research and implementation stakeholder organization.

Suggested Activities: Building a healthier community optimally involves local people working together to transform the conditions and outcomes that matter to them.¹⁷⁸ The goal of community-level interventions is to create social and legal climates that reduce the desirability, acceptability, and attainability of tobacco products, including e-cigarettes. These kinds of activities are multi-dimensional and often encompasses or accompany the other components of tobacco prevention (i.e., school and media-based education and counter-marketing campaigns; changes in policy/taxation; and cessation services). Developing the conditions to reach these goals will require an array of expertise and infrastructure such as dedicated professional staff, community assessments, strategic planning, community mobilization, intervention, advocacy, evaluation, public relations, and marketing of successful efforts.

Recommendations for Abatement Strategy 2 (S2): Community Organization and Information Exchange. The first abatement task after initial funding will be to hire new staff, integrate them new job titles into the existing organizational structure and initiate a community stakeholder consortium group. Table 8 provides an overview of recommended staffing requirements and activities.

¹⁷⁸ Herndon, S. et al. *Partners: Keys to Success and Meeting Challenges in Tobacco Control in North Carolina*. N.C. Med. J., vol. 82,3 (2021): 198-202, <https://www.ncmedicaljournal.com/content/ncm/82/3/198.full.pdf>.

Table 8. Abatement Strategy 2: Community Organization and Information Exchange				
Bellwether Recommendations	Timeframe	Consultants or Organizations	Abatement and Plaintiff Staff	
Integrate new staff positions into the existing organizational structure	<p><u>Conduct:</u> 1) Weekly staff meetings. 2) Monthly stakeholder video calls; 3) Semi-annual in-person stakeholder meetings; 4) Annual 2-day conference, with external speakers (i.e., CDC, FDA, Tobacco Free Kids, ALA, AHA, ACA, Tobacco Institute, other prevention and cessation experts).</p> <p>Quarterly meetings production, implementation, evaluation and reporting.</p>	Community Organization consultant	Core Abatement Staff	
Contract with Community Organization expert to develop a blueprint development of a community-based participatory research and implementation stakeholder organization.		1) Intervention and Implementation mapping consultants		
		Independent CPA financial compliance consultant		
Resources Needed	Annual Expected Expenditures	Expected Outcomes		
In collaboration with existing in-house parent and community outreach.	For community org consultant: \$28,000 per year. Financial compliance consultant: \$28,000 per year	Quarterly and Annual certified operational, accounting, financial and variance report.		
1) Office space, IT equipment, furniture and supplies, travel, overnight shipping, text messaging service, 2) Volunteer stakeholder retreat, space rental, food for meetings, stakeholder travel, 3) Annual conference with in-house staff, abatement funded staff, consultants, and stakeholders.	<p>Infrastructure, administration, and management costs are estimated at 5% of costs.</p> <p>\$36,500 is budgeted per year for two abatement staff and stakeholder conferences: Guest speakers, space rental, per diem, conference amenities</p>	<p>1) A plan for internal org structure & community stakeholder network; 2) A well organized stakeholder org; 3) quarterly project data, implementation, and recommended action reports.</p> <p>1) Clinical and medical benefits; 2) Community and public health benefits; 3) Economic benefits; 4) Policy and legislative benefits.</p>		

Table 9 provides a model for stakeholder coalition representation. Table 10¹⁷⁹ outlines five community organization tactics that are based on the Community Toolbox (CTB), which is an online resource for taking action in communities. The CDC provides instruction and training on the formation and management of a local tobacco control stakeholder coalition, and the e-cigarette abatement structure presented here is based on CDC recommendations.¹⁸⁰

Table 9. E-cigarette Abatement Stakeholder Organization	
State	Legislature (elected officials)
	Comptroller
	Departments of Education, Health, and State
	NGOs: Education, Parent, Health, Faith-based
	Corporations and Local Businesses
City or County	Commissioner/Mayor
	Chamber of Commerce
	Local Businesses
	Faith-based Organizations
	Local Chapter NGOs
Education	Universities, Colleges, and Community College
	Vocational Education
	School Districts
	Pre-K, Elementary, Middle, High School

¹⁷⁹ See *The Community Tool Box*, Ctr. Community Health & Dev. U. Kan. (2021), <https://ctb.ku.edu/en/table-of-contents> (The presented community organization strategies are based on this source).

¹⁸⁰ *Evidence Based Guides for States*, CDC,

<https://www.cdc.gov/tobacco/stateandcommunity/guides/index.htm#partnerships-user-guide> (last accessed Jan. 27, 2022).

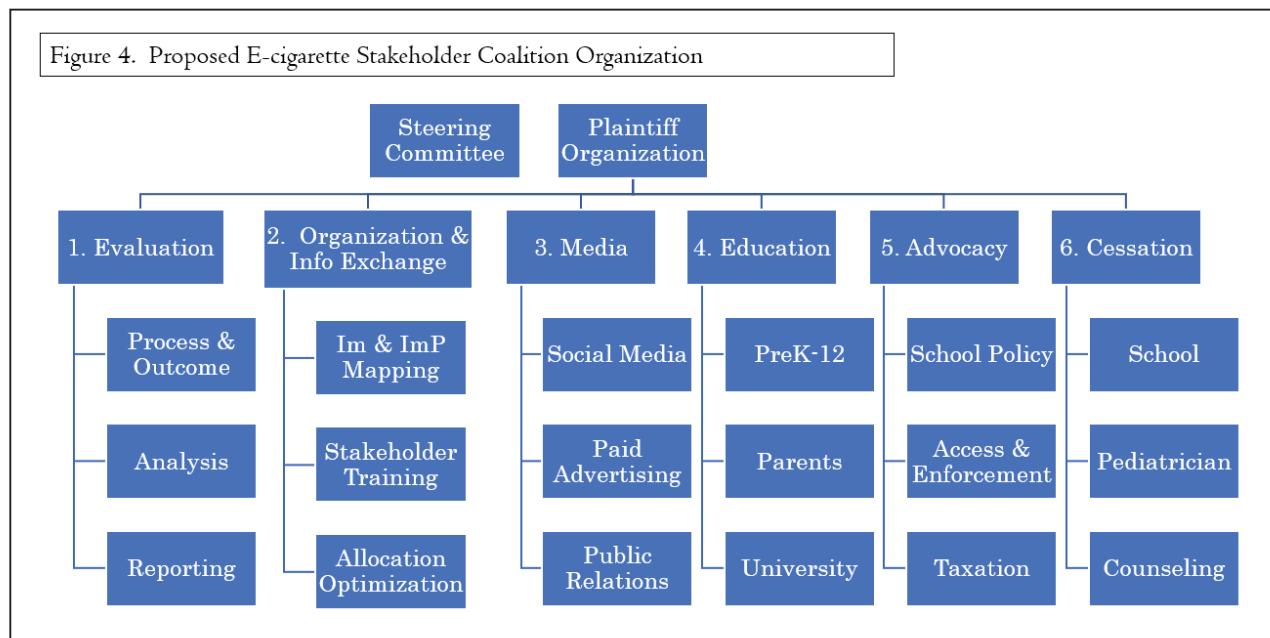
Stakeholders selected by DOI user characteristics:
Innovators, Early Adopters, Early Majority, Late
Majority, and Laggards

The e-cigarette stakeholder coalition is intended to support strong partnerships at local and state levels to advance evidence-based policy, systems, and environmental strategies to improve tobacco and e-cigarette abatement control. To this end, a stakeholder task force will be assembled to spread and scale evidence-based interventions and to reduce the prevalence of adolescent and young adult e-cigarette use and related health burdens, disparities, and costs.

Table 10. Recommendation 2. Community Organization and Information Exchange	
Task 1. Developing a Strategic Plan and Organizational Structure.	
Hire and train implementation infrastructure staff. A local community organizer is essential.	
Compile a list of candidates by abatement organizational category and recruit using Diffusion of Innovation snowball sampling. Determine organizational leadership and committee structures.	
Using Intervention Mapping to state mission, vision, objective, goals, and needed resources and relationships to accomplish objectives and key agents of change in the partnership. This includes surveillance, counter-vaping mass media, school programming, parent education, anti-vaping policies, and access to cessation services.	
Prepare strategic and action plans to achieve objectives and outcomes and ensure sustainability of the initiative including fund raising.	
Task 2. Assess Community Needs and Resources	
Prepare report on county, city, or school demographics, assets and resources, and overall SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats).	
Collect information about the extent of youth and young adult vaping, and associated risk factors. Conduct forums and listening sessions.	
Using GIS, locate schools, vaping outlets, health and cessation services, high-risk areas for youth vaping, recreational facilities, and positive youth development organizations.	
Task 3. Get Issues on the Community Agenda	
Prepare communication strategies to gain public support.	
Using public relations strategies, ensure the public understands the vaping problem and the importance of resolving the problem.	
Deliver awareness campaign to generate public concern with presentations, videos, fact sheets, websites, e-mails, and social media.	
Task 4. Use the Community Partnership to Implement Programs and Advocate for Change	
Examine health disparities, encourage racial justice, promote cultural competency and inclusion of diverse communities.	
Commence implementation of education programs, counter media strategies, and cessation strategies.	
Conduct advocacy research for policy/regulation adoption. Use GIS to map political, educational, and commercial districts. Overlay public opinion on e-cigarettes prevention and cessation.	
Inform state and local elected officials of community concerns, suggested remedies, and advocate for e-cigarette remediation and abatement. Champion enforcement of underage access, licensing of sellers, and reversal of state preemptive local e-cigarettes control, price increases, and ban of discount pricing.	
Task 5. Conduct Process and Outcome Evaluation and Implement of Quality Improvements	
Predetermine criteria to judge program performance.	

Selection of stakeholder coalition members will depend on their Diffusion of Innovation (DOI) user characteristics, with purposeful selection of Innovators and Early Adopters to accelerate diffusion of selected abatement strategies.¹⁸¹ The purpose of the task force will be to leverage cross-sector individual and organizational knowledge and skills to strategically plan for, implement, and monitor fidelity to the plan; evaluate outcomes; and readjust strategy. The charge of the task force will be to meet annual goals and primary endpoints: (1) among nonusers, to prevent the initiation and continued use of e-cigarettes; (2) among current users, to promote quitting e-cigarettes; and (3) among the abatement population, to identify and eliminate e-cigarette related health disparities among higher-risk population groups.

Figure 4 provides an example for a model of an abatement stakeholder organizational chart. Each primary abatement strategy has a dedicated staff member with a variety of deliverables from staff or consultants.



Bellwether Recommendation 4. Contract with tobacco public relations and counter-vaping mass media organizations with experience in youth and young adults' campaigns.

¹⁸¹ Sept. 2021 Kelder Report at 67-68.

Suggested Activities. Typically, effective health communication interventions and counter-marketing strategies employ a wide range of efforts, including: (1) Paid counter-marketing aimed at combating tobacco advertising with paid television, radio, out-of-home (e.g., billboards, transit), print, and digital advertising; (2) Media advocacy through public relations/earned media efforts (e.g., press releases/ conferences, social media, and local events), which are often timed to coincide with holidays, heritage months, and health observances; (3) Health promotion activities, such as working with health care professionals and other partners and promoting quit lines or other cessation services; and (4) Efforts to reduce or replace tobacco industry sponsorship at events where youth are likely to attend (concerts, festivals, sporting events). Effective mass-reach health communication messaging delivers strategic, culturally appropriate, and high-impact messages via adequately funded and *sustained* campaigns that are integrated into a comprehensive school district, city, or county program.¹⁸² Schools can play a vital role in small media within school messaging such as strategically located posters, parent messaging via school website and texting, morning announcements, billboards on busses, sport stadium and gymnasium, computer stickers, science fairs, and community events at school.

Recommendations for Abatement Strategy 3 (S3): Counter-Vaping Mass Media. Contract with an experienced counter-vaping media organization for social media and paid advertising. See Table 11 for an overview of counter-vaping media campaign activities and Table 12 for a description of the strategies and goals of the media campaigns by demographic.

Target audiences for media messages include:

- PreK-12 students;
- Parents of PreK-12 students;
- Young adults ages 19-25;

¹⁸² Best Practices for Comprehensive Tobacco Control Programs at 30-39, DHHS (2014), https://www.cdc.gov/tobacco/stateandcommunity/best_practices/pdfs/2014/comprehensive.pdf.

- County-level registered voters;
- Within school communication to school staff, visitors and students.

Table 11. Abatement Strategy 3. Counter-Vaping Mass Media

Bellwether Recommendations	Timeframe	Consultants or Organizations	Abatement & Plaintiff Staff
Contract with an experienced counter-vaping media organization for <u>social media and paid advertising</u> .	Conduct monthly strategy meetings culminating in a quarterly strategic plans for message focus and theme, as well as recommendation for media channel buy.	Outside youth prevention and cessation <u>media</u> organization.	<u>Abatement Staff:</u> Project Director Assistant Project Director Epidemiologist <u>Communications & Outreach</u> Intervention Parent Education
Contract with an experienced <u>within school</u> counter-vaping media organization.	Conduct a new within school small media campaigns. Small media includes: strategically located posters, parent messaging via school website and texting, morning announcements, billboards on busses, sport stadium and gymnasium, computer stickers, science fair, and community events at school.	Within-school <u>small media</u> counter-vaping organizations.	<u>Plaintiff Staff:</u> Communications and related educational departmental staff.
Resources Needed	Annual Expected Expenditures	Expected Outcomes	
Targeted media campaigns for: 1) Young children 2-8 years old 2) Children 8-11 3) Teens 12-14 4) Teens 15-18 5) Young Adults 19-25 6) Parents of young children and teens; 7) Students and school staff 8) Registered voters	\$2.25 per population within audience category	Quarterly media campaigns by target audience: 1) Youth and young adult campaign; 50-75% reach; 2-5x/day with social media, radio, bill board, texting campaign, TV, Movie theaters, 2) Parent campaign; 50-75% reach; 2-4x/week; 3) Within school small media campaign; 70-80% reach; 4-5x/week with school sponsorship; 4) County registered voter information campaign 40-60% reach; 2-5x/week. Quarterly reporting of media exposure and recommendations for next quarter.	

Table 12 Recommendation 3. Counter Vaping Mass Media.

Age band	SCT Counter Advertising Goals	IM and DOI Counter Advertising Strategies
Ages 4-8 (Pre-K-2 grade)	<ul style="list-style-type: none"> • Focus messaging on anti-vaping, introductory knowledge of vaping, normative beliefs, social support from important adults, intention not to use, positive reinforcement of non-vaping • Incorporate observational learning from important adults • Develop belief in healthy body, healthy mind, healthy lungs 	<ul style="list-style-type: none"> • Implement quarterly campaign mix of mass and social media tailored to 4–8-year-old target audience and selected subgroup • 2-3 counter advertising goals rotated each quarter • Messaging corresponding to school and holiday events
Ages 8-11 (3-5 grade)	Ibid for 8–11-year-old target audience plus: <ul style="list-style-type: none"> • Increasingly complex and age-adjusted SCT goals listed above, plus observational learning and outcome expectations • Incorporate observational learning from important adults 	Ibid and adjusted for 8–11-year-old target plus: <ul style="list-style-type: none"> • Emphasis on prevention
Ages 11-14 (6-8 grade)	Ibid for 11-4-year-old target audience plus: <ul style="list-style-type: none"> • Increasingly complex and age-adjusted SCT goals listed above, plus development outcome expectations, social norms, and personal refusal skills and self-efficacy • Lower barriers to cessation services 	Ibid adjusted for 11-14 and targeted subgroups plus: <ul style="list-style-type: none"> • Messaging topics adjusted for cognitive, social and physical growth • Emphasis on normative beliefs and anti-vaping intention
Ages 14-18 (9-12 grade)	Ibid and age adjusted for 14–18-year-old target audience plus: <ul style="list-style-type: none"> • Increasingly complex SCT goals listed above, plus collective efficacy • Incorporate observational learning w/college aged role models w/DOI process • Reduce cessation barriers, increase opportunities for healthy behaviors 	Ibid and adjusted for 14–18-year-old target plus: <ul style="list-style-type: none"> • Emphasis on losing control, media literacy, biological consequences • Introduction to advocacy and policy tobacco control solutions
Ages 19-25 (work/ college)	Ibid and adjusted for 19–25-year-old target plus: <ul style="list-style-type: none"> • Increasingly complex SCT goals listed above. • Observational learning w/social influencer role models w/DOI process 	Ibid and adjusted for 19–26-year-old target plus: <ul style="list-style-type: none"> • Emphasis on recruitment into cessation services and supporting prevention
Parents of K-12 year old	<ul style="list-style-type: none"> • Focus messaging on self-efficacy, collective efficacy, outcome expectations, knowledge, normative beliefs, social support, intentions, positive reinforcement, reduce environmental barriers for cessation, increase opportunities for healthy behaviors • Incorporate observational learning w/social influencer role models w/DOI process 	<ul style="list-style-type: none"> • Quarterly campaign mix of mass and social media tailored parent and influential adult target audiences and selected subgroups • Anti-vaping family rules, normative expectations, parent child communication strategies, parental monitoring of tobacco behavior
26 and older	<ul style="list-style-type: none"> • Focus messaging on knowledge, normative beliefs, collective efficacy 	<ul style="list-style-type: none"> • Quarterly campaign to inform adults about e-cigarettes, prevention and cessation strategies

Abatement Recommendation 5. 1) Implement school staff training and student education; 2); Implement e-cigarette prevention and cessation parent education; and 3) Contract with family systems therapy consultant.

Suggested Activities. Similarly, to the previously discussed surveillance strategies, a successful tobacco or e-cigarette prevention program should mirror the child's typical stage of physical, social and emotional development. Because of these multitude of age, social, developmental differences the abatement plan offers a portfolio of evidence based or evidence informed e-cigarettes and tobacco prevention programs that have been implemented successfully in many parts of the country. These include: the *Stanford Toolkit*,¹⁸³ *TRUTH Initiative*,¹⁸⁴ *Taking Down Tobacco (TDT)*, *ASPIRE*,¹⁸⁵ *CATCH My Breath*,¹⁸⁶ and *Know the Risks*,¹⁸⁷ *The Real Cost*,¹⁸⁸ and *Tobacco Free Schools*.¹⁸⁹

Parents and guardians have a strong and influential role in supporting their children's health and play a critical role in adolescent development, including e-cigarette and tobacco risk-taking behaviors. Engaged parents help guide their children successfully through school and life, advocate for their children, and can help shape a healthy environment.¹⁹⁰

Recommendations for Abatement Strategy S4 Education and Parent Engagement:

Engagement: Offer 5 hours per year of e-cigarette prevention education for students ages 8-11 and 20 hours per year of e-cigarette prevention education for students ages 11-18.

¹⁸³ *Tobacco Prevention Toolkit*, Stan. Med. (2021), <https://med.stanford.edu/tobaccopreventiontoolkit.html>.

¹⁸⁴ Truth Initiative (2021), <https://truthinitiative.org/>.

¹⁸⁵ Aspire, U. Tex. MD Anderson Cancer Ctr. (2021), <https://aspire2.mdanderson.org/>.

¹⁸⁶ See CATCH My Breath a nicotine vaping prevention program, CATCH (2020), <https://letsgo.catch.org/bundles/23725>; see also Be Vape Free: Working together to create a vape-free generation, CVS Health Found. (2021), <https://www.bevapefree.org/>.

¹⁸⁷ *Know the Risks: E-cigarettes & Young People*, CDC, (2021), <https://e-cigarettes.surgeongeneral.gov/>.

¹⁸⁸ *The Real Cost* Campaign, FDA, (Feb. 26, 2021), <https://www.fda.gov/tobacco-products/public-health-education/real-cost-campaign>.

¹⁸⁹ *The American Heart Association's Tobacco-Free Schools Toolkit*, Am. Heart Ass'n., <https://www.heart.org/en/affiliates/tobacco-free-schools>, (last accessed Jan. 27, 2022).

¹⁹⁰ Gardner, F. Transporting Evidence-Based Parenting Programs for Child Problem Behavior (Age 3-10) Between Countries: Systematic Review and Meta-Analysis. J. Clinical Child & Adolescent Psychol., vol. 45, 6 (2016): 749-762, <https://www.tandfonline.com/doi/pdf/10.1080/15374416.2015.1015134?needAccess=true>.

Offer 10 hours of parent education per year. Table 13 provides an overview of activities and Table 14 a more detailed description of program goals, activities, staffing and costs.

The pandemic has caused untold hardships on parents, students, and teachers but one notable improvement has been the rapid development of distance and supplemental education strategies where non-core, non-tested mandatory curricula are delivered digitally to teachers, students, and parents. This has opened a window of opportunity for program developers to reduce costs of program delivery and direct delivery of opt-in parent education. What is needed is school and staff training and continued support to use these new tools to implement best practice and evidence-based e-cigarette prevention activities.

The recommended number of hours per year of health education needed to sustain prevention effects has been estimated at around 25 hours,¹⁹¹ and this is the recommendation for annual, developmentally appropriate health education for e-cigarette prevention at school using the recommended programs listed above and in my September 2021 Expert Report. For students, these hours can arise from numerous sources: classroom health education time, integrated into core and tested curriculum, included in physical education or art, homework assignments, invited speakers, extracurricular activities, school clubs, and during after school programming. For parents, education can be directly emailed or texted to them, at school presentations, small group format on campus, as a school or district policy initiative directed by the School Health Advisory Council and linked to the parent teacher association or parent teacher organizations.

¹⁹¹ *Accelerating Progress in Obesity Prevention: Solving the Weight of the Nation*. Natl. Academies Press (2012) https://www.ncbi.nlm.nih.gov/books/NBK201141/pdf/Bookshelf_NBK201141.pdf.

Table 13. Recommendation 4. Education and Parent Engagement

Age Band	School Abatement Goals	School Abatement Strategy
Ages 2-8 (Pre-K-2 grade)	<ul style="list-style-type: none"> Review existing materials, and develop and inventory of age-appropriate content, books, games, messaging strategies for parents of children and other adults Curriculum content should focus on, introductory knowledge of vaping, normative beliefs, social support from important adults, intentions not to use, positive reinforcement of non-vaping Develop digital video program materials 	<ul style="list-style-type: none"> Abatement training: preschools, daycare, parent groups Professional training should include classroom management For families experiencing significant family stress, refer to more intensive parenting instruction or mental health counseling (ibid age groups below) Parent smoking/vaping cessation referral to (ibid age groups below)
Ages 8-11 (3-5 grd)	<ul style="list-style-type: none"> Develop age-appropriate curriculum and messaging content (ibid age groups below). Calibrate program content on SLT using IM and IpM 5 hours per year of messaging 	<ul style="list-style-type: none"> ES School Health Index to determine existing programs and policies; select/schedule for improvement. School and parent abatement training (ibid age groups below). CATCH My Breath 5th; TDT; TRUTH Campaign, Stanford TK Stanford Toolkit (ibid age groups below)
Ages 12-14 (6-8 grd)	<ul style="list-style-type: none"> Calibrate program content on SLT using IM and IpM 20 hours per year of curriculum and other school messaging strategies Incorporate observational learning videos high school aged role models w/DOI process 	<ul style="list-style-type: none"> Conduct MS SHI to determine existing programs and policies; select/schedule for improvement CATCH My Breath MS, ASPIRE MS; TDT; TRUTH Campaign; Stanford TK INDEPTH alternative to suspension
Ages 15-18 (9-12 grd)	<ul style="list-style-type: none"> Develop age-appropriate content curriculum and messaging content Calibrate program content on SLT (emphasis on collective efficacy) using IM and IpM 20 hours per year of curriculum and other school messaging strategies Incorporate observational learning videos w/college aged role models w/DOI process 	<ul style="list-style-type: none"> Conduct HS SHI to determine existing programs and policies; select/schedule for improvement CATCH My Breath HS; ASPIRE HS; TDT; TRUTH Campaign; Stanford TK Schools and parent abatement training Reduce cessation barriers, increase opportunities for healthy behaviors
Ages 19-25 (work/college) and Parents	<ul style="list-style-type: none"> Reduce cessation barriers 10 hours per year of vaping prevention training and outreach 	<ul style="list-style-type: none"> Referral to vaping prevention services Implement CDC Parents for Healthy Schools

Table 14. Abatement Strategy 4. Education and Parent Engagement

Bellwether Recommendations	Timeframe	Consultants or Organizations	Abatement & Plaintiff Staff
Implement school staff training and student education	1) Semesterly student prevention activities; 2) Monthly abatement site coordinators meetings; 3) Annual teacher and staff in-service training using CDC Healthy Schools; 4) Monthly district School Health Advisory Council meetings.		Abatement Staff: Project Director Assistant Project Director Communications Intervention and Implementation Parent Education <u>In addition to staff listed above:</u> 1 FTE Health Ed per 15 K-12 school 1 FTE Health Ed per 20 Colleges
Implement e-cigarette prevention and cessation parent education	1) Conduct/oversee parent outreach campaign using CDC Parents for Healthy Schools; 2) Present at annual teacher and staff in-service training; 3) Attend monthly district School Health Advisory Council meetings; 4) Attend PTA and PTO meetings.	<u>Family systems therapy</u> consultant for evidence-based approached to e-cigarette cessation	
Contract with <u>family systems therapy</u> consultant	Advise quarterly for parent strategies for prevention and cessation activities.		Plaintiff Staff: Principal, Superintendent, School Board, H. Ed, Nursing, Counseling, Parent Support, Athletics, Phys. Ed, Comm, Info Tech
Resources Needed	Annual Expected Expenditures	Expected Outcomes	
Access to support staff: Field travel reimbursement.	\$6.00 per K-12 student for e-cigarette health education program implementation, including e-cigarette parent education	School prevention hours: 5 hours ages 8-11; 20 hours ages 11-14; 20 hours ages 15-18	
	1) \$28,000 per year for family systems therapy consultant.	10 hours per year of parent prevention program exposure per family/care-giver.	Referral to treatment options following recommendations from the family systems therapy consultant.

Schools are often at a loss for appropriate actions to take when students are in violation of school district vaping policies.¹⁹² To find the correct balance between punitive and therapeutic e-cigarette disciplinary practices it is recommended to obtain advice from a family systems therapy consultant. The CDC has ready-made assessments, curriculum,

¹⁹² Even though King County does not have jurisdiction over schools within the county, the same applies. In this case, King County would provide funding and assistance to schools for referral of e-cigarette users into treatment.

evaluation, and training materials for schools to effectively implement tobacco and e-cigarette prevention programs students and parents.

These materials were developed with evidence and professional consensus, widely used, are free, and easily available. What is needed is paid abatement staff to apply the DOI, IM and IpM processes, select from several abatement options, gather community, school and parent support, and prepare schools and school districts to pave the way for prevention and cessation program implementation.

Abatement Recommendation 6. 1) Contract 14 days per year with an experienced youth advocacy organization to assess the Bellwether region and develop an annual advocacy strategic plan; 2) Contract with local youth health and education special constituency organizations for assistance with passing new or updated policies; and 3) Once youth e-cigarette policies are enacted, conduct compliance checks at random intervals.

Suggested Activities. Each of the Bellwether sites have youth tobacco control policies, but many are not comprehensive, do not include e-cigarettes, or have not been updated for best practices. By contracting with a national youth advocacy organization, a systematic review of state and local policies can be compared to evidence based or best practices from other states and regions. The systematic review will be given to local youth health and education advocacy organizations as a pool of potential policies that would have an impact on the rate of youth vaping. Example policies include: 1) Clean indoor and outdoor air ordinances; 2) Comprehensive e-cigarette ban on school campuses and property and at extracurricular events; 3) Treatment focused penalties for K-12 student and staff violations to school policy; 4) Implementation of age-recognition and verification software for on-line or at point of purchase; 5) Routine retail compliance checks and enforcement with penalties for violations for marketing, promotions, and underage purchasing of e-cigarettes or e-liquids; 6) E-cigarette retail licensing and registration and required clerk training; 7) Raising the price of e-cigarettes; 8) Local prohibition of coupons or other price discounts; and 9) Nullification of any preemption of local or state youth anti-vaping policies.

Recommendations for Abatement Strategy S5. Youth Anti-Vaping Policies and Advocacy. The selection of youth e-cigarette abatement policies should depend on sufficient evidence of effectiveness, yet enactment and implementation depend on existing laws within the Bellwether regions, public support, and the willingness of elected officials to entertain youth e-cigarette control proposals. While publicly funded employees obviously do not directly participate in the legislative and rule-making process, they are not prohibited from studying or writing about the types, structures, and effects of policy alternatives. This includes participating in stakeholder organizations and acting as a resource witness. Thus, because of advocacy restrictions, the primary recommendation for dedicating full-time staff and paid consultants to participate in tobacco advocacy coalitions as providers of information needed for informed decision making and implementation of enacted anti-vaping policy solutions. Because of jurisdictional, political, and territorial considerations, in-house staff need to work in close collaboration with the stakeholder consortium, plaintiff's existing in-house legal and organizational leadership, and local advocacy organizations.

A frequently reported problem is lack of personnel to conduct retail compliance checks or the public entity lacks the permission to conduct such checks. It is recommended that paid abatement staff conduct random audit compliance checks to confirm age of sale and point of purchase, and work with state comptroller or other regulatory authorities to report violations. In the case where this is not permitted, it is recommended the abatement site offer funding to a local organization to conduct the compliance checks. In addition, compliance field staff will conduct checks for compliance with clean indoor air ordinances and laws. If all fails, then the organization should contact the state comptroller's office to request special permission for compliance checks. A ratio of one FTE per 195 retail outlets would allow for retail compliance checking two to three times per year.

Table 15. Abatement Strategy 5. Youth Anti-Vaping Policies and Advocacy

Bellwether Recommendations	Timeframe	Consultants or Organizations	Abatement & Plaintiff Staff
Contract with advocacy organizations to discuss, plan for, improve upon and advocate local or state youth anti-vaping policies. Example policies include: 1) Clean indoor and outdoor air ordinances; 2) Comprehensive e-cigarette ban on school campuses and property and at extracurricular events; 3) Treatment focused penalties for K-12 student and staff violations to school policy; 4) Implementation of age recognition and verification software for online or at point of purchase; 5) Routine retail compliance checks and enforcement with penalties for violations for marketing, promotions, and underage purchasing of e-cigarettes or e-liquids; 6) E-cigarette retail licensing and registration and required clerk training; 7) Raising the price of e-cigarettes; 8) Local prohibition of coupons or other price discounts; 9) Nullification of pre-emptive local or state youth anti-vaping policies.	1) Daily meetings with related advocacy organizations and elected officials; 2) Monthly outreach to school district, schools, colleges and university; 3) Monthly internal report of activities; 4) Semi-annual progress report.	Outside a national youth health e-cigarette advocacy organization Local youth health e-cigarette advocacy organizations (e.g., State level American Heart Association, American Lung Association, American Cancer Association, Elementary, Middle, High School, Principal, Superintendent or School Board organizations, etc.)	Abatement Staff: Project Director Asst. Project Director Advocacy Intervention Communications & Outreach Retail Compliance Plaintiff Staff: Legal, Organizational Leadership, Parent & Community Outreach
Contract with local youth health and education special constituency organizations for assistance with passing new or updated policies.			
Resources Needed	Annual Expected Expenditures	Expected Outcomes	
In collaboration with existing in-house legal, organizational leadership, parent and community outreach.	For national advocacy organization: ~\$14,000 to \$28,000 per year.	Detailed project advocacy blueprint, staff and stakeholder training, quarterly troubleshooting and recommendations.	
Access to support staff; Field travel reimbursement.	For local special constituency advocacy organizations: \$15,000 per organization	Annual enactment, implementation, and enforcement of retail e-cigarette control policies. Two vape shop compliance checks per year. Annual progress towards targeted policy solutions for vaping prevention	

Bellwether Recommendation 7. 1) Contract with on-line and text-based cessation organization (such as Tobacco Institute); 2) Offer training to clinicians regarding the best practices for screening, intervention, and referral of youth to cessation services; and 3) Implement school-based tobacco addiction surveillance, on-site treatment and/or referral.

Suggested Activities. While the focus of this report is prevention of e-cigarettes use by youth and cessation is the focus of Dr. Winickoff's report, I briefly mention cessation here because of its importance in combatting the youth vaping epidemic.¹⁹³ Youth prevention and cessation intersect at the point of experimentation and access to e-cigarettes. Where adolescent and young adult vaping is highly prevalent, users act as potent normative role models to those their age and younger. A higher rate of e-cigarette use in the local community can enhance misperceptions about the actual social and health consequences, stimulate vaping intentions and susceptibility, and lower self-efficacy to resist peer pressures to experiment with e-cigarettes.¹⁹⁴ A high rate of e-cigarette use in the local community also provides greater opportunities to satisfy their curiosity about the flavors and impulsive urges to experiment with e-cigarettes. It has been reported that underage teens can easily obtain their e-cigarettes from their friends.¹⁹⁵

Recommendations for Abatement Strategy 6 (S6): Availability of Cessation Services.

Referral of e-cigarette smoking youth and young adults is a necessary part of prevention. K-12 schools and colleges need to be aware and prepared to refer students who are experimenting with or currently using e-cigarettes. Both the American Lung Associations *In-Depth* program and the school-based part of the Tobacco Institutes *This is Quitting* offers guidance for young people in schools with quitting oriented health education

¹⁹³ As set forth above, Dr. Winickoff's report discusses treatment strategies and interventions, including cessation.

¹⁹⁴ Agaku, I.T. et al. Associations between public e-cigarette use and tobacco-related social norms among youth, (2020) *Tobacco Control*, 29, 3, 332-340, <https://tobaccocontrol.bmjjournals.org/content/29/3/332>; Agaku, I.T., Discordance between perceived and actual tobacco product use prevalence among US youth: a comparative analysis of electronic and regular cigarettes (2019), *Tobacco Control*, 28,2, 212-219, <https://tobaccocontrol.bmjjournals.org/content/28/2/212>.share; Preventing Tobacco Use Among Youth and Young Adults: A Report of the Surgeon General (2012 SGR), DHHS (2012), <https://www.ncbi.nlm.nih.gov/books/NBK99237/>.

¹⁹⁵ Mantey, D.S. et al. *Retail access to ENDS and frequency of ENDS use in high school students*. *Tobacco Reg. Sci.*, vol 5,3 (2019), 280-290. https://www.researchgate.net/publication/332840547_Retail_Access_to_E-cigarettes_and_Frequency_of_E-cigarette_Use_in_High_School_Students.

and referral to digital and in-person cessation services¹⁹⁶. These automated cessation services are not a substitute for the individualized consultations and clinical sessions Dr. Winickoff recommends in his report. Developmentally, students in middle school and high school are often interested in formal drug treatment counselors or physician-led cessation services which is why the tele-medicine cessation referral and treatment services put forth in Dr. Winickoff's report is a necessary and appropriate strategy.¹⁹⁷

The school counselor, nurse, PE teachers and coaches, school administrators, PTA/PTO, and classroom teachers need to be made aware of these programs and counsel students and parents to take advantage of them. In addition to personal referral by school staff, two other strategies are suggested to ensure e-cigarette users know about and have access to cessation treatment services. First, the Bellwethers should deploy mass media informing youth e-cigarette users of on-line and in-person services. Second, to the Bellwethers should update and train clinicians and other medical providers on the best intervention practices and/or resources available locally referrals.

¹⁹⁶ This is Quitting may seem redundant with My Life My Quit that is present in Kansas and New Hampshire, as Dr. Winickoff reports, it's important to offer several options to teens, including one that does not involve scheduling or talking to a counselor. This is Quitting is text based and does not require personal interaction, a preference of some teens.

¹⁹⁷ As set forth above, Dr. Winickoff's report discusses treatment strategies and interventions, including cessation.

Table 16. Abatement Strategy 6. Availability of Cessation Services

Bellwether Recommendations	Timeframe	Consultants or Organizations	Abatement & Plaintiff Staff
Contract with on-line and text-based cessation organization (such as Tobacco Institute).	1) Daily media outreach and promotion of digital cessation through social media, schools, parent organizations, medical practices, athletics and sports, public health, music and art organizations, LGTBQ organizations.	Contract for youth digital and referral cessation service.	<u>Abatement Staff:</u> Project Director Assistant Project Director Intervention Communications
Contract with Pediatric, Family Practice, OBGYN, Adolescent Medicine, Respiratory and Dental networks for physician/clinic engagement, training, referral or cessation delivery.	Implement monthly information-exchange clinical practice and addiction treatment specific webinars.		
Implement school based tobacco addiction surveillance, on-site treatment and/or referral.	1) Routine monthly recruitment strategies; 2) Monthly public meetings with counseling, discipline, school police regarding treatment and punishment option's for underage use.		<u>Plaintiff Staff:</u> School Board, Superintendent, Principal, Hlth Ed, Nursing, Counseling, Parent Support, Athletics, PE, Comm., IT.
Resources Needed	Annual Expected Expenditures	Expected Outcomes	
In collaboration with existing district and school personnel: Principal, Superintendent, School Board, Health Education, Nursing, Counseling, Parent Support Specialists, Athletics, Physical Ed, Communications, Information Technology.	For digital and text messaging cessation organization: ~\$150,000 per year. \$15,000 each for local medical practise organizations to update and train youth cessation strategies and referrals to members (Pediatrics, Dental, Family Practice, Adolescent Medicine, Respiratory).	Annual school staff training and reporting on recruitment of e-cigarette and combustible users, enrollment in cessation services, success rate.	
Access to support staff; Field travel reimbursement.	For the clinical treatment service cost estimate, please refer to Dr. Winikofs report.	Increased patient referral to digital cessation services and follow up.	

Appendix 2: San Francisco Unified School District, California

San Francisco Unified School District serves over 57,000 students and is the seventh largest school district in California. Located in Northern California, San Francisco is the 17th most populous city in the United States, and the fourth most populous in California, with 873,965 residents as of 2019. It is located mostly at the north end of the San Francisco Peninsula in the San Francisco Bay Area, making it the second most densely populated large U.S. city, and the fifth most densely populated U.S. county.

In San Francisco County, according to the 2019 census²¹¹, there were 101,024 individuals aged 4



to 19 (i.e., preschool to 12th grade); 57,571 individuals aged 20 to 25 years old (i.e., young adults); and 681,388 individuals 26 years old and over. These head counts are important to calculate costs associated per person, such as mass media and school health education costs. The 6-year annual population growth rate²¹² was 60%, and this was used as a parameter for increase in the headcount over the 15-year abatement period. Inflation was indexed to 2% per year and this was used to increase costs throughout the 15-year abatement period. The estimated number of

²¹¹ U.S. Census Bureau, (2019), <https://data.census.gov/cedsci/>.

²¹² *Annual Resident Population Estimates for States and Counties*, U.S. Census Bureau, <https://www.census.gov/programs-surveys/popest/technical-documentation/research/evaluation-estimates/2020-evaluation-estimates/2010s-counties-total.html>.

e-cigarette retail outlets is 378. The median salary for someone with a bachelors degree in 2019 in San Francisco was \$91,809 and someone with a graduate or professional degree, \$121,346.

The most recent and localized estimation of current e-cigarette prevalence comes from the 2019 San Francisco area CDC Youth Risk Behavior Surveillance Survey (YRBS)²¹³. Unlike the National Youth Tobacco Survey or Monitoring the Future which are annual surveys that are representative at the national level, the YRBS is administered every two years in odd years and is representative at the state level and in some instances at the county or city levels. The San Francisco current e-cigarette smoking in 2019 was 16.0% overall for high school, and broken by grade levels: 12.8% for 9th grade; 16.9% for 10th; 16.6% for 11th, and 17.0% for 12th.

To understand the impact of e-cigarettes on San Francisco Unified School District and craft the appropriate abatement program, I have examined a number of internal documents that plaintiffs have provided as exhibits, as well as depositions of key representatives from the county, and have interviewed several individuals with knowledge the local nuisance caused by e-cigarettes. I have explained the six prevention strategies described in Table 1 of this document and my September 2021 Expert Report and interviewees have reported an insufficient and inconsistent level of funding compared to the CDC guidelines to lower youth e-cigarette use. When asked about each specific strategy it was noted that progress had been made towards several of the recommended strategies, but that each needs additional strategic planning, funding and implementation.

Because of this, abatement strategies and costs have been estimated based on my research and field experience in community youth health intervention design and implementation, with guidance from CDC on recommended strategies. The goal for San Francisco Unified School District is to reduce youth vaping via a

²¹³ *Youth Risk Behavior Surveillance System (YRBSS)*, CDC, (2019), <https://www.cdc.gov/healthyyouth/data/yrbs/index.htm>.

sufficient and predictable level of funding is needed, over a *sufficient period of time* to build an infrastructure of equipment, with experienced and trained personnel, and a strong community stakeholder organizational structure.²¹⁴

San Francisco Unified School District is within San Francisco County. Per capita costs have been calculated based on the San Francisco population with the exception of (1) youth, young adult, parent, and county e-cigarette education mass media. The targeted media populations have been extended to cover the entire county and not only the immediate San Francisco Unified School District area because peer use is one of the most important predictors of youth e-cigarette use, and a potent prevention strategy is countering mass media that spreads misinformation, normalizes e-cigarette use and depicts vaping as attractive and satisfying. Applying mass media at the county level will ensure the peers of and youth most likely to influence the students in San Francisco Unified School District will be exposed to counter vaping mass media, thereby helping to inoculate the youth of San Francisco Unified School District.

Applying these parameters described above, the estimated annual and total costs for San Francisco Unified School District Prevention Abatement program²¹⁵ are presented in Tables 20, 21 and 22. Table 20 provides the year-by-year and total costs. Table 21 provides the costs per person based on the CDC Tobacco Control Framework. Table 22 presents the year one line-by-line budget. The remaining 14 years shown in Table 20 are adjusted based on parameters listed above with the exception of several startup costs that are specific to the first year. Salaries are

²¹⁴ King, B.A., & Graffunder, C. *The Tobacco Control Vaccine: a population-based framework for preventing tobacco-related disease and death*. *Tobacco Control*, vol. 27,2 (2018): 123-124; <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5850888/pdf/nihms948398.pdf>; Kong, A.Y., & King, B.A. *Boosting the Tobacco Control Vaccine: recognizing the role of the retail environment in addressing tobacco use and disparities*. *Tobacco Control*, 2020, <https://tobaccocontrol.bmjjournals.org/content/early/2021/05/05/tobaccocontrol-2020-055722>; *Best Practices for Comprehensive Tobacco Control Programs*, DHHS (2014), https://www.cdc.gov/tobacco/stateandcommunity/best_practices/pdfs/2014/comprehensive.pdf; *E-Cigarette Use Among Youth and Young Adults: A Report of the Surgeon General* (2016 SGR), https://www.cdc.gov/tobacco/data_statistics/sgr/e-cigarettes/pdfs/2016_sgr_entire_report_508.pdf.

²¹⁵ Note, Dr. Cutler is providing additional costing, particular with regard to cessation treatment.

reflective of the census median income for those with a college degree or graduate or professional degree.

Appendix 2. Table 20. San Francisco Unified Expected Costs	
Year 1 Total	9,284,223
Year 2 Total	9,489,357
Year 3 Total	9,699,102
Year 4 Total	9,913,562
Year 5 Total	10,132,847
Year 6 Total	10,357,067
Year 7 Total	10,586,334
Year 8 Total	10,820,764
Year 9 Total	11,060,476
Year 10 Total	11,305,591
Year 11 Total	11,556,232
Year 12 Total	11,812,527
Year 13 Total	12,074,606
Year 14 Total	12,342,600
Year 15 Total	12,616,647
15 year Total	163,051,936

Table 21. San Francisco Unified Cost per Person		
San Francisco County Population	Cost Per Person	
881,549	\$ 9,284,223	\$ 10.53
	\$ 4,445,368	\$ 5.04
	\$ 2,571,871	\$ 2.92
	\$ 150,000	\$ 0.17
	\$ 1,760,854	\$ 2.00
	\$ 356,130	\$ 0.40

Appendix 2, Table 22. San Francisco Year One Expected Abatement Costs

Role	Abatement Strategy	Name	Salary	YEAR 1						
				Months	FTE X	Months	Salary	Benefits	Total	
Core Staff Personnel Costs										
Project Manager III	S2: Community Org.	TBA	130,799	12	100.0	12.00	130,799	49,506	180,305	
Assistant Project Director	S2: Community Org.	TBA	121,346	12	100.0	12.00	121,346	44,898	166,244	
Interv & Impl (Senior Social Sci)	S4: Community Org	TBA	121,346	12	100.0	12.00	121,346	44,898	166,244	
Parent Education	S4: School & Parents	TBA	121,346	12	100.0	12.00	121,346	44,898	166,244	
Communications Specialist III	S3: Counter-Vaping	TBA	121,346	12	100.0	12.00	121,346	44,898	166,244	
Community Outreach (Comm Spec II)	S3: Counter-Vaping	TBA	121,346	12	100.0	12.00	121,346	44,898	166,244	
School, Local and State Policy	S5: Policy & Advocacy	TBA	121,346	12	100.0	12.00	121,346	44,898	166,244	
Epidemiologist	S1: Surveillance	TBA	121,346	12	100.0	12.00	121,346	44,898	166,244	
Data Manager	S1: Surveillance	TBA	121,346	12	100.0	12.00	121,346	44,898	166,244	
Information Technologist	S1: Surveillance	TBA	121,346	12	100.0	12.00	121,346	44,898	166,244	
Retail and Clean Air Compliance	S5: Policy & Advocacy	TBA	121,346	12	100.0	12.00	121,346	44,898	166,244	
Administrative	S2: Community Org	TBA	121,346	12	100.0	12.00	121,346	44,898	166,244	
Administrative	S2: Community Org	TBA	68,664	12	100.0	12.00	68,664	25,406	94,070	
Abatement Strategy Specific Personnel Costs (non-core)				Core Staff FTE	13.00				Year 1 Core Personnel Costs	
Health ed. 1 staff per 15 Schools	S4: School & Parents	TBA	68,664	12	847	101.60	581,355	215,101	796,456	
Health ed. 1 staff per 10 Colleges	S4: School & Parents	TBA	68,664	12	910	109.20	624,842	231,192	856,034	
Retail/Clean Air Compl. M 195 retail outlets	S5: Policy & Advocate	TBA	68,664	12	134	23.26	123,103	49,248	172,251	
Consultant Costs				Abatement Staff FTE	19.51				Year 1 Abatement Specific Personnel Costs	
Intervention Mapping	S0: Abatement Planning				14 days per year			14	2,000	28,000
Implementation Mapping	S0: Abatement Planning				14 days per year			14	2,000	28,000
E-cigarette Control	S0: Abatement Planning				14 days per year			14	2,000	28,000
Community Organization	S2: Community Org				14 days per year			14	2,000	28,000
Financial Compliance	S2: Community Org				14 days per year			14	2,000	28,000
National Youth Advocacy Orgs	S5: Youth anti-vaping advocacy				14 days per year			14	2,000	28,000
Family Systems Therapy	S4: School & Parents				14 days per year			14	2,000	28,000
Contracting Service Organizations									Year 1 Consultant Costs	196,000
Health Research Org	S1: Surveillance: PreK-12; Young Adults 19-25				Semi-Annual County Representative Sample (40% of 17% non survey costs)					381,215
Health Research Org	S1: Surveillance: PreK-12 Parent				Semi-Annual County Representative Sample (40% of 17% non survey costs)					391,275
Health Research Org	S1: Surveillance: Qualitative				Semi-Annual County Purposeful Sample					195,608
AC Nelson	S1: Industry Surveillance				Quarterly E-cigarette Industry Reports					150,000
Paid/Unpaid media	S3: Counter-Vaping: Youth PreK-12 grade				Quarterly youth campaign; 50-75% reach; 2.5a/day			101,024		227,003
Paid/Unpaid media	S3: Counter-Vaping: Young Adults 19-25				Quarterly 19 to 25 campaign; 50-75% reach; 2.4a/week			57,571		129,535
Paid/Unpaid media	S3: Counter-Vaping: Parents of PreK-12				Quarterly parent campaign; 50-75% reach; 2-4a/week			202,047		454,506
Paid/Unpaid media	S3: Counter-Vaping: School Staff/Student				Quarterly school staff and student campaign; 80-90% reach; 4-5a/week			101,024		227,393
Paid/Unpaid media	S3: Counter-Vaping: Public Information				Quarterly County 26 year and older campaign; 40-60% reach; 2.5a/week			691,080		1,533,120
Prev Programs: PreK-12 Students	S4: PreK-12 students: \$16/student			# students:	101,024	\$/student:		\$		606,142
Youth Advocacy Organizations	S5: Pol & Advo. Local: \$15K/org			# orgs:	10	\$/org:		15,000		150,000
Digital & Text Messaging Service	S6: Cessation: 8th-12th, 19-26 yo				Cessation report tailored to County w/ monthly report					150,000
Medical Practice Based Orgs	S8: Cessation: \$15K per org			# orgs:	10	\$/org:		15,000		150,000
Digital Network Costs									Year 1 Contracting Service Organization Costs	4,756,051
Web Server - Installation										15,000
Office & Equipment Costs									Year 1 Digital Network Costs	15,000
Cell phone + data: \$500 phone; \$50 per month data							# employees:	33	1,100	35,756
Travel and Event Costs									Year 1 Office and Equipment	35,756
Bi-Annual Conf (2). Space (\$4,250), Speaker (\$4,500), Ppts (200), Meals (\$95/person).				2	4,250	4,500	200	85		36,500
Intervention Field Travel, # field staff, 75 miles, 200 days, .55 per mile					16	75	200	0.55		134,084
Surveillance Field Travel, # field staff, 75 miles, 200 days, .55 per mile					16	75	200	0.55		134,084
Conf travel, 10 staff, 700 airfare, 3 nights (hotel 200, per diem 95, ground travel 75)				10	700	3	470	75		35,850
									Year 1 Travel and Events	340,517
									Total Year 1 Direct Costs	8,284,223